STANDING COMMITTEES:
Natural Resources & Energy, Chair
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ROBERT L. COWLES
Wisconsin State Senator
2nd Senate District

JOINT COMMITTEES:
Audit Committee, Co-Chair

Testimony on 2019 Senate Bill 218

Senator Robert Cowles
Senate Committee on Economic Development, Commerce and Trade
January 22, 2020

Thank you, Chairman Feyen and committee members, for holding a hearing and allowing me to testify on 2019 Senate Bill 218. This bill would require DWD to allocate up to $1 million every biennium from the Fast Forward appropriation to train workers in the installation, repair or maintenance of solar energy or wind energy systems and the inspection of those systems.

The renewable energy workforce is consistently one of the fastest growing workforce sectors in the country. Wisconsin added 1,786 jobs in the clean energy industry in 2018, a 2.4% increase over the year prior for a total of 76,383 workers. As we await final numbers, companies were expected to add more than 6,000 jobs to the clean energy industry in 2019, a 6.0% growth rate. Inside of the clean energy industry, renewable energy generation accounted for 5,963 workers in 2018 after adding 303 jobs in the year prior, a 5.4% increase.

Over the past few years, Wisconsin's renewable energy generation workforce has grown faster than the Midwest average, including doubling that rate in 2018. This trend will not be slowing in the foreseeable future either, as 6,280.38 megawatts (approximately 6.3 gigawatts) are currently active in the Midcontinent Independent System Operator (MISO) queue, which I've included with this testimony, and even more projects, including 1 gigawatt of solar from Alliant Energy, are earlier in the planning stages. This is due to a shift in market forces making renewable energy competitive with fossil fuels in the open market. Yet, despite the growth in this industry, a report by Clean Jobs that surveyed renewable energy employers in Wisconsin found that nearly 88% stated it was "somewhat" or "very" difficult to find new employees.

2019 Senate Bill 218, as modified by Senate Amendment 1, would require the Department of Workforce Development (DWD) to allocate up to $1,000,000 biennially, starting at the beginning of the next biennium, for grants to employers or consortiums of employers to train and certify individuals in the installation, repair or maintenance of solar energy or wind energy systems and the inspection of solar energy, wind energy and electrical systems. The amendment addresses items brought to our attention by the Department, including changing the new allocation from a set amount to "up to" and starting this new program in the next biennium to allow DWD to set-up grant guidelines and begin outreach. Senate Amendment 1 also adds inspection to the list of eligible trades for training grants as the current lack of inspectors, which are an important part of the process, can cause burdensome delays towards bringing new renewable energy projects on the grid.

The funding for these grants would come from the existing $6,250,000 annual appropriation for Workforce Training Grants and Services in DWD's Fast Forward program. Fast Forward helps employers to train and retain highly skilled workers by investing over $20 million in grant contracts to date for more than 200 worker training projects. The program benefits hundreds of employers and thousands of workers across Wisconsin.

Grants under Senate Bill 218 would be capped at $250,000 and matched under existing DWD guidelines by the employer or consortium of employers, and must train and certify at least 25 individuals. Finally, in the already existing annual report by DWD on Fast Forward, the Department must discuss this newly created renewable energy workforce training program, including the total number of individuals who were hired and retained.

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Fossil fuels aren't found in Wisconsin; they're brought to our state. Renewable energy can be generated right here in Wisconsin, and in the process will create thousands more jobs over the next decade as we're seeing a stronger commitment by utilities, communities, and individuals to renewable energy generation projects of all sizes being announced, approved, and operating. This includes a recent groundbreaking by WEC on the Two Creeks utility-scale solar project, the Public Service Commission of Wisconsin's approval of the Point Beach and Badger Hollow utility-scale solar projects, Alliant's announcement of their Powering What's Next plan to increase solar generation substantially, and other openings of customer-scale solar projects such as one near my district at Sisters of St. Francis of the Holy Cross in Green Bay.

As market forces close fossil fuel plants in-favor of renewable energy facilities, as a state, we need to ensure that impacted workers are cross-trained to tackle tomorrow's energy sector instead of leaving these workers behind. Senate Bill 218 would help to further advance Wisconsin's renewable energy generation and our growing renewable energy workforce by establishing a state commitment to create more of these highly-skilled, family-supporting technical jobs of the future. In the process, we can create a stronger economy, a cleaner environment, and a more diverse and secure energy portfolio.

Active Renewable Energy Projects in the Midcontinent Independent System Operator (MISO) Queue as of January 13, 2020

Project #	Request Status	Queue Date	Appl In Service Date	Transmission Owner	County	Study Group	Study Phase
J1000	Active	3/12/2018	10/1/2021	American Transmission Co. LLC	Grant	East (ATC)	PHASE 2
J1002	Active	3/12/2018	10/1/2021	American Transmission Co. LLC	Waushara	East (ATC)	PHASE 2
J1003	Active	3/12/2018	10/1/2021	American Transmission Co. LLC	Dodge	East (ATC)	PHASE 2
J1009	Active	3/12/2018	9/1/2020	American Transmission Co. LLC	Kenosha,Racine	East (ATC)	PHASE 2
J1010	Active	3/12/2018	9/1/2020	American Transmission Co. LLC	Kenosha,Racine	East (ATC)	PHASE 2
J1011	Active	3/12/2018	9/1/2022	American Transmission Co. LLC	Kenosha,Racine	East (ATC)	PHASE 2
J1042	Active	3/9/2018	9/1/2021	American Transmission Co. LLC	Walworth	East (ATC)	PHASE 2
J1053	Active	3/12/2018	10/31/2021	American Transmission Co. LLC	Jefferson	East (ATC)	PHASE 2
J1092	Active	3/12/2018	9/30/2021	Northern States Power (Xcel Energy)	Saint Croix	West	Study Not Started
J1121	Active	3/12/2018	9/1/2021	American Transmission Co. LLC	Marathon	East (ATC)	PHASE 2
J1153	Active	3/12/2018	4/1/2021	American Transmission Co. LLC	Sheboygan	East (ATC)	PHASE 2
J1154	Active	3/12/2018	4/1/2021	American Transmission Co. LLC	Jefferson	East (ATC)	PHASE 2
J1171	Active	3/12/2018	8/1/2021	American Transmission Co. LLC	Dodge	East (ATC)	PHASE 2
J1188	Active	3/12/2018	8/31/2021	American Transmission Co. LLC	Rock	East (ATC)	PHASE 2
J1214	Active	4/27/2019	10/30/2022	American Transmission Co. LLC	Dane	East (ATC)	Study Not Started
J1253	Active	4/29/2019	8/1/2021	American Transmission Co. LLC	Fond du Lac	East (ATC)	Study Not Started
J1304	Active	4/29/2019	12/1/2021	American Transmission Co. LLC	Rock	East (ATC)	Study Not Started
J1305	Active	4/29/2019	12/1/2021	American Transmission Co. LLC	Green	East (ATC)	Study Not Started
J1314	Active	4/29/2019	6/30/2022	Dairyland Power Cooperative	Polk	West	Study Not Started
J1377	Active	4/29/2019	7/15/2022	American Transmission Co. LLC	Rock	East (ATC)	Study Not Started
J1397	Active	4/29/2019	10/30/2022	Dairyland Power Cooperative	Juneau	West	Study Not Started
J1410	Active	4/29/2019	10/30/2022	American Transmission Co. LLC	Dane	East (ATC)	Study Not Started
J1460	Active	4/29/2019	6/30/2022	American Transmission Co. LLC	Rock	East (ATC)	Study Not Started
J1474	Active	4/29/2019	7/1/2022	Northern States Power (Xcel Energy)	Chippewa	West	Study Not Started
J801	Active	6/16/2017	9/1/2020	Dairyland Power Cooperative	Pierce	West	PHASE 2
J818	Active	6/16/2017	9/1/2019	American Transmission Co. LLC	Jefferson	East (ATC)	GIA

POI Name	Summer & Winter MW (No Change)	Fuel	Generating Facility	Negotiated In Service Date	Decision Point 1 ERIS MW	Decision Point 1 NRIS MW	Decision Point 2 ERIS MW	Decision Point 2 NRIS MW
Nelson Dewey - Lancaster 138kV Line	50	Solar	PV Photovoltaic		50	50	0	0
Wautoma 138kV Switchyard	99	Solar	PV Photovoltaic		99	99	0	0
North Beaver Dam 69 kV Substation	50	Solar	PV Photovoltaic		50	50	0	0
Pleasant Prairie - Racine 345kV Line Tap	400	Solar	PV Photovoltaic		400	400	0	0
Arcadian - Zion 345kV Line Tap	400	Solar	PV Photovoltaic		400	400	0	0
Arcadian - Zion 345kV Line Tap	400	Solar	PV Photovoltaic		400	400	0	0
North Lake Geneva 138kV Substation	200	Solar	PV Photovoltaic		200	200	0	0
Concord SW YD 138 kV Substation	300	Solar	PV Photovoltaic		200	200	0	0
Three Lakes 115 kV Substation	100	Solar	PV Photovoltaic		0	0	0	0
Stone Lake - (Pershing) - Gardner Park 345 kV Line	200	Solar	PV Photovoltaic		200	200	0	0
Holland 138 kV Substation	150	Solar	PV Photovoltaic		150	150	0	0
Jefferson 138 kV Substation	75	Solar	PV Photovoltaic		75	75	0	0
Butternut 138 kV Substation	100	Solar	PV Photovoltaic		100	100	0	0
Sheepskin 69 kV Substation	50	Solar	PV Photovoltaic		50	50	0	0
Rockdale - Columbia SW Yard 345 kV Line tap	300	Solar	PV Photovoltaic		0	0	0	0
South Fond Du Lac to Fitzgerald 345 kV line	100	Solar	PV Photovoltaic		0	0	0	0
Paddock - Townline Road 138kV Line	65	Solar	PV Photovoltaic		0	0	0	0
Albany - Bass Creek 138kV Line	49.9	Solar	PV Photovoltaic		0	0	0	0
Apple River 161 kV Substation	100	Solar	PV Photovoltaic		0	0	0	0
Wempletown - Rockdale 345kV Line Tap	98.56	Solar	PV Photovoltaic		0	0	0	0
Whistling Wings 69 kV Substation	25	Solar	PV Photovoltaic		0	0	0	0
N. Madison 345 kV Substation	300	Solar	PV Photovoltaic		0	0	0	0
Sunrise 138 kV Substation	200	Solar	PV Photovoltaic		0	0	0	0
Pine Lake - Eagle Point 115kV Line	200	Solar	PV Photovoltaic		0	0	0	0
Crystal Cave-Rock Elm 161kV line tap	74	Solar	PV Photovoltaic		74	74	0	0
Jefferson 138kV Substation	149	Solar	PV Photovoltaic	4/1/2022	149	149	149	149

Project #	Request Status	Queue Date	Appl In Service Date	Transmission Owner	County	Study Group	Study Phase
J850	Active	6/16/2017	9/30/2021	American Transmission Co. LLC	Rock	East (ATC)	GIA
J864	Active	6/16/2017	9/1/2021	American Transmission Co. LLC	Richland	East (ATC)	GIA
J870	Active	6/16/2017	9/10/2021	American Transmission Co. LLC	Grant, Iowa	East (ATC)	GIA
J871	Active	6/16/2017	9/10/2021	American Transmission Co. LLC	Grant, Iowa	East (ATC)	GIA
J878	Active	6/16/2017	9/10/2021	American Transmission Co. LLC	Kenosha	East (ATC)	GIA
J947	Active	6/16/2017	9/15/2019	American Transmission Co. LLC	Grant	East (ATC)	GIA
J986	Active	3/12/2018	9/1/2020	American Transmission Co. LLC	Wood	East (ATC)	PHASE 2
J1085	Active	3/12/2018	9/1/2021	American Transmission Co. LLC	Marathon,Taylor,Wood	East (ATC)	PHASE 2
J1366	Active	4/29/2019	9/1/2022	Northern States Power (Xcel Energy)	Eau Claire	West	Study Not Started
J1374	Active	4/29/2019	8/1/2021	American Transmission Co. LLC	Grant	East (ATC)	Study Not Started
J1483	Active	4/29/2019	10/30/2023	American Transmission Co. LLC	Iowa	East (ATC)	Study Not Started
J819	Active	6/16/2017	9/15/2020	American Transmission Co. LLC	Lafayette	East (ATC)	GIA
J926	Active	6/16/2017	9/1/2021	Northern States Power (Xcel Energy)	Saint Croix	West	PHASE 2

POI Name	Summer & Winter MW (No Change)	Fuel	Generating Facility	Negotiated In Service Date	Decision Point 1 ERIS MW	Decision Point 1 NRIS MW	Decision Point 2 ERIS MW	Decision Point 2 NRIS MW
RCEC Bradford - W. Darien 138kV Line	250	Solar	PV Photovoltaic		250	250	250	250
Lone Rock 69kV Substation	49.98	Solar	PV Photovoltaic		49.98	49.98	49.98	49.98
Eden - Wyoming Valley 138kV Line Tap	200	Solar	PV Photovoltaic	8/1/2020	200	200	200	200
Eden - Wyoming Valley 138kV Line Tap	100	Solar	PV Photovoltaic	8/1/2021	100	100	100	100
Paris 138kV Substation	200	Solar	PV Photovoltaic		200	200	200	200
Potosis - Hillman 138kV Line	200	Solar	PV Photovoltaic		200	200	200	200
Port Edwards - Sand Lake 138kV	149.76	Solar	PV Photovoltaic		149.76	149.76	0	0
Gardner Park - J821 POI - Stone Lake 345 kV Line	300	Wind	WT Wind Turbine		300	300	0	0
Tremval - Seven Mile 161 kV Line Tap	200	Wind	WT Wind Turbine		0	0	0	0
ATC Ebenezer Sub on Lancaster-Eden 138kv line	95	Wind	WT Wind Turbine		0	0	0	0
Hill Valley 345 kV Substation	99	Wind	WT Wind Turbine		0	0	0	0
Darlington 138kV Substation	99.9	Wind	WT Wind Turbine		99.9	99.9	99.9	99.9
Pine Lake - Apple River 161 kV Line	101.28	Wind	WT Wind Turbine		101.28	101.28	0	0
Total Summer and Winter Generation: 6,280.38 MW								

Mike Kuglitsch

STATE REPRESENTATIVE • 84TH ASSEMBLY DISTRICT

Testimony for 2019 Senate Bill 218

January 22, 2020

Good afternoon Chair Feyen and Members of the Committee. Thank you for the opportunity to testify regarding Senate Bill 218, which uses Fast Forward grants through the Department of Workforce Development for training personnel in wind and solar energy systems.

The United States Bureau of Labor Statistics has identified solar photovoltaic installers and wind turbine service technicians as the fastest growing professions in the country. Wisconsin is no exception and growth in solar and wind has already begun, but is predicted to pick up in the coming years due to 5,385 megawatts of solar and 895 megawatts of wind in the current development que at Midwest Independent System Operator (MISO) as of last Friday (January 17th). In addition, Alliant Energy announced late in 2019 an expansion of its Wisconsin solar energy generation by up to 1,000 megawatts by the end of 2023.

To meet the growing demand, Senate Bill 218 allows businesses to create consortiums to pool resources for education and training of potential employees relating to wind and solar. Training characteristics will be based on the consortium's needs and the appropriate training level is determined by the individual businesses.

The maximum amount a consortium can receive is capped at $250,000 and the overall program is capped at $1,000,000 per biennium. Reimbursement to a consortium will be available through Wisconsin's Fast Forward grants program at the Department of Workforce Development and can be up to half the cost of training. Business matching costs are limited to what is approved in Wisconsin's Administrative Code and to qualify, the business must commit to hire the individuals once training is complete.

The amendment from the authors delays funding for the program until next biennium and adds "inspection" of wind and solar systems as an acceptable training option.

Finally DWD shall submit, as part of their annual report each December, these specifics of the program: 1) the number of people trained; 2) the cost to train the employee; and 3) was the employee hired and retained.

I appreciate the Committee's time and I believe it is our job as legislators to be proactive and identify opportunities where we can promote and train for family sustaining jobs of the future.

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U.S. Bureau of Labor Statistics

Fastest Growing Occupations

Fastest growing occupations: 20 occupations with the highest percent change of employment between 2018-28.

Click on an occupation name to see the full occupational profile.

OCCUPATION	GROWTH RATE, 2018-28	2018 MEDIAN PAY
Solar photovoltaic installers	63%	$42,680 per year
Wind turbine service technicians	57%	$54,370 per year
Home health aides	37%	$24,200 per year
Personal care aides	36%	$24,020 per year
Occupational therapy assistants	33%	$60,220 per year
Information security analysts	32%	$98,350 per year
Physician assistants	31%	$108,610 per year
Statisticians	31%	$87,780 per year
Nurse practitioners	28%	$107,030 per year
Speech-language pathologists	27%	$77,510 per year
Physical therapist assistants	27%	$58,040 per year
Genetic counselors	27%	$80,370 per year
Mathematicians	26%	$101,900 per year
Operations research analysts	26%	$83,390 per year

OCCUPATION	GROWTH RATE, 2018-28	2018 MEDIAN PAY
Software developers, applications	26%	$103,620 per year
Forest fire inspectors and prevention specialists	24%	$39,600 per year
Health specialties teachers, postsecondary	23%	$97,370 per year
Phlebotomists	23%	$34,480 per year
Physical therapist aides	23%	$26,240 per year
Medical assistants	23%	$33,610 per year

Last Modified Date: Wednesday, September 4, 2019

U.S. Bureau of Labor Statistics

Office of Occupational Statistics and Employment Projections
PSB Suite 2135
2 Massachusetts Avenue NE
Washington, DC 20212-0001

Telephone:1-202-691-5700
www.bls.gov/ooh

Contact OOH

WISCONSIN CONSERVATIVE ENERGY FORUM

Scott Coenen
Executive Director
Wisconsin Conservative Energy Forum

Testimony in Support of Senate Bill 218

Thank you to Chairman Feyen and members of the Senate Committee on Economic Development, Commerce and Trade for the opportunity to testify today in support Senate Bill 218. Wisconsin Conservative Energy Forum has a unique mission in our state; to bring a free market, conservative voice to the debate over energy and emerging technologies like solar and wind. Our support for SB 218 is grounded in the understanding that the renewable energy market is quickly emerging and this emergence offers Wisconsin very unique challenges and opportunities.

In the last decade the cost of utility scale solar has fallen 90% and wind generation 70%. Through efficiency gains, capacity building, and old-fashioned ingenuity these cost declines put renewable sources of energy in a position they have never been before; among the lowest cost options on the marketplace. Solar and wind, right now, represent significant new tools in our toolbox to meet Wisconsin and the Midwest's energy needs. To be clear, we are moving into a new phase of solar and wind development. One that is not driven by the heavy hand of government but is driven by consumer demand, market economics, and technological innovation. The renewable share of the market in Wisconsin is projected to increase dramatically in the next 10 years.

Innovation is allowing us the ability to harness two new resources, the sun and wind, to generate power at a mass scale. The opportunity this represents for Wisconsin is tremendous; in economic development, jobs local tax revenue, lease payments to landowners, and energy independence for our state. In Wisconsin, we have always relied on sources of energy from outside the state, spending $15 billion last year importing oil, natural gas, and coal. This $15 billion represents hundreds of thousands of jobs supported by our dollars in locations firmly outside of Wisconsin. With increased renewable generation cited and located in Wisconsin, those jobs start to come back. Policymakers must ask themselves a question; are we ready for these jobs to come back?

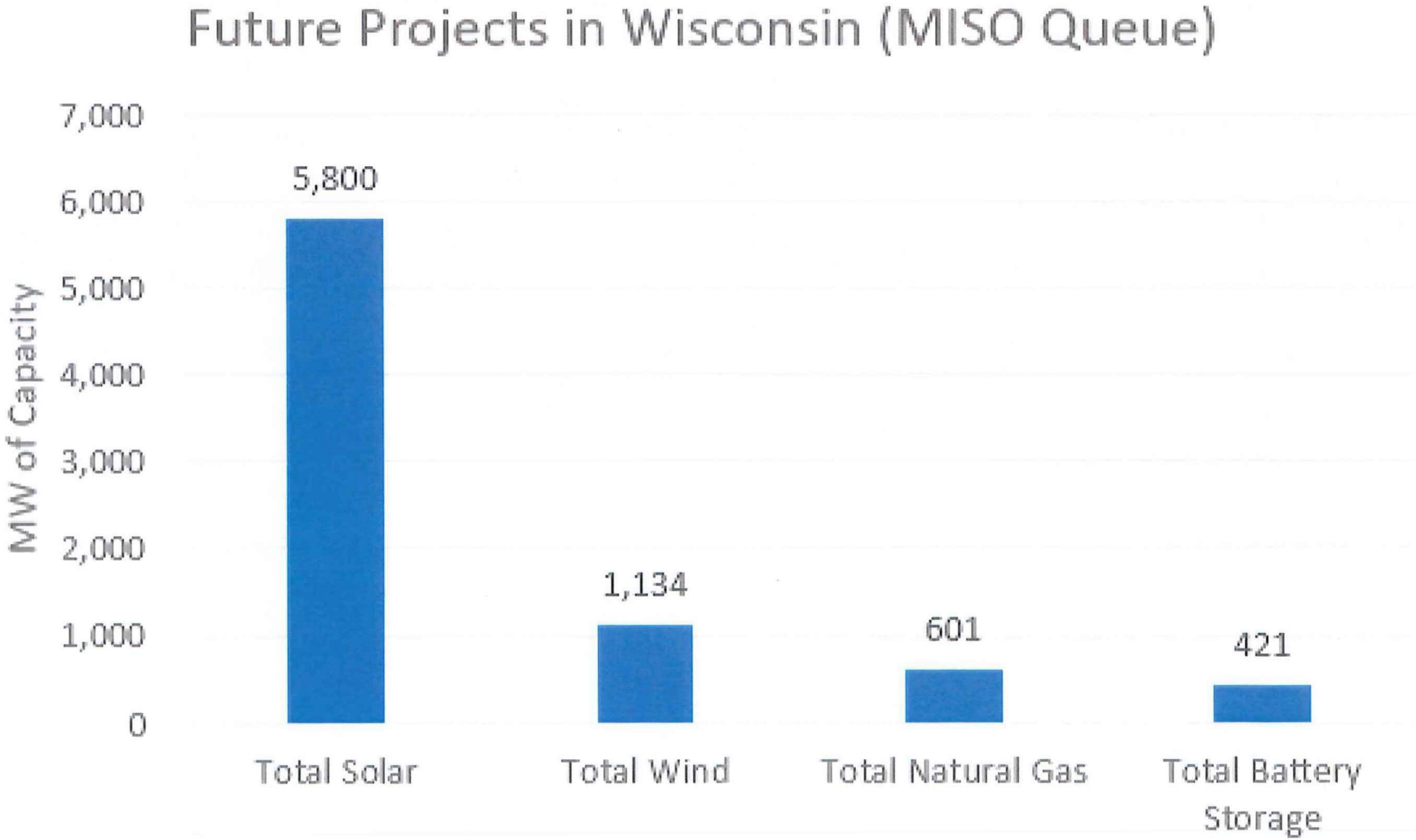
Representatives Kuglitsch, Neylon and Senator Cowles are seeking to begin to address this question with SB 218. Focusing resources and attention through the Department of Workforce Development and creating a place for the solar and wind industries to address workforce needs represents good first progress. Pulling the renewable private sector forward and into the conversation over Wisconsin's workforce needs in this emerging industry is an encouraging first step.

Ultimately, we recognize this is just the beginning. Cost competitive renewables, like any disruptive technology, present problems and require solutions. I would be happy to take any questions the committee has. Thank you again for the opportunity to testify in support of Senate Bill 218.

Scott Coenen
Executive Director
Wisconsin Conservative Energy Forum

WISCONSIN CONSERVATIVE ENERGY FORUM

Wisconsin's Future: Proposed Projects to 2023



midwest renewable energy association

January 22nd, 2020
Custer, Wisconsin

Assembly Committee on Economic Development, Commerce, and Trade
c/o Representative Dan Feyen (Chair)
Representative Patrick Testin (Vice-Chair)

Dear Assembly Committee,

I am writing to provide information regarding Senate Bill 218 relating to the creation of reimbursement grants to employers for payment of employee training and certification in wind and solar energy technologies. It is my intention to provide information to the committee that may facilitate discussion on the merits and potential impacts for SB 218, particularly in regard to the development of Wisconsin's solar energy market.

The Midwest Renewable Energy Association (MREA) is a 501(c)3 tax-exempt, non-profit organization incorporated in Wisconsin in 1990 with a mission to promote renewable energy, energy efficiency, and sustainable living through education and demonstration. We are a membership association with a paid membership of 2,501 personal members and 122 business members. Twenty-three of our business members are involved in the Wisconsin solar and/or wind industry. Our primary engagement with these members is through the provision of technical training, the facilitation of internships with partnering technical college training programs, hosting professional networking events, and public engagement as part of public education events and community-led group purchasing programs for solar energy. You can read more about our work at https://www.midwestrenew.org/.

Our work with Wisconsin solar and wind energy employers has made us aware of the needs and challenges that they face in attracting and retaining employees to meet the demands of the growing industry. These needs have historically fallen outside of the priorities of state and federal workforce development agencies and, as such, private organizations like the MREA have been working to help satisfy training and hiring needs. Until recently, these efforts have seemed sufficient as the pace of market growth had been steady and manageable for most employers. Recent increases in demand in all sectors (residential, commercial, and utility scale) are outpacing the ability of Wisconsin-based contractors to expand their workforce. Market prices, customer interest, and utility development plans all indicate that the pace of market growth will continue to increase over the next 5 years.

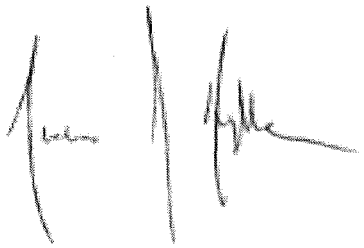
Detailed industry employment data in the solar and wind industry is not publicly available in Wisconsin but a few national data sets provide indication of the needs and status of the industry, particularly the solar industry. The most prominent report *Solar Training and Hiring Insights* was published in 2018 by the Solar Training Network with funding from the US Dept. of Energy Solar Energy Technologies Office (see https://www.americansolarworkforce.org/resources/sthi/). Key findings from the report show that 84% of employers in the solar industry find it very difficult or somewhat difficult to hire for entry-level jobs and that only 34% of the industry offers on the job training. The report also found that companies that

midwest renewable energy association

invested in training showed significant reductions in the labor cost per kW installed, providing strong justification for investing in the training of existing employees.

Our own evaluations with the 9 employers and 18 students that have participated in the MREA Solar Professional Internship program over the last 2 years support the need for the training of entry level workforce in the Wisconsin solar industry. At this time, Wisconsin businesses are hiring to meet demand. They are facing increased competition from out-of-state firms that are looking to Wisconsin as a new growth market. They are aware that their employees require significant training investment to successfully engage in the rapidly growing industry. They are also increasingly aware that their investments in employee training will result in business growth, efficiency, and increased competitiveness.

Sincerely,



Nick Hylla, Executive Director
715-592-6595, x-107, nickh@midwestrenew.org

Early Bird Discount Ends Dec. 1st!

SOLAR TRAINING ACADEMY

What is the Solar Training Academy?

The Solar Training Academy was developed by the Midwest Renewable Energy Association (MREA) to prepare students for careers in the solar industry, and give participants a leg-up when pursuing solar jobs. And Solar Installer is one of the fastest growing jobs in the US!

Designed to fit your busy schedule, our Solar Training Academies are a series of weekend classes providing students with industry-leading solar technical training.

TOPICS INCLUDE:

- Photovoltaic (PV) fundamentals
- PV site assessment practices
- Design principles and considerations

Upon academy completion, students qualify to sit for the North American Board of Certified Energy Practitioners (NABCEP) PV Associate Exam, an increasingly sought-after solar credential valued by the industry.

THIS IS YOUR SOLAR PROFESSIONAL GATEWAY!
Learn more and register: midwestrenew.org/sta

mrea
midwest renewable energy association

Classes meet one weekend a month for three months starting early 2020. Dates vary by location.

QUESTIONS? Contact us at: courses@midwestrenew.org or call us at 715-592-6595.

www.MidwestRenew.org/sta

Quality TRAINING

The MREA Solar Training Academy includes:

BASIC PHOTOVOLTAICS (PV 101)

This 8-hour course teaches the fundamentals of photovoltaic systems. Participants will learn how photovoltaic (PV) systems work, diagram the four PV system types, describe and identify components, understand the best application and limitations of each system type, define the solar window, make energy efficiency recommendations, estimate system loads, and understand the basics of PV site assessment.

PV SITE ASSESSOR TRAINING (PV 201)

Participants in this 8-hour course will learn how to perform a PV site assessment for a home or small business. The course will cover site assessment tools, load analysis, energy e ciency recommendations, array placement options, basic system sizing, cost estimates, and evaluating existing infrastructure on site.

PV SYSTEM DESIGN (PV 202)

This 16-hour course teaches the basic step-by-step process of designing a utility- interactive residential or small commercial PV system. Participants will use example site assessments, PV system component design examples, and PV system case studies to learn about selecting equipment, system sizing, layout planning, array siting, and other design considerations.

PV LABS & DESIGN SCENARIOS (PV 204)

This 8-hour course is designed to demonstrate PV system design principles learned in PV System Design (PV 202) through construction of two portable labs systems. Participants will work from line diagrams and component specification sheets to build a grid-interconnected PV system and a stand-alone battery based PV system. Students will verify proper mechanical and electrical connections and commission each system. In addition, students will work in small teams to develop PV system designs that meet system siting, system sizing, and system configuration requirements as spelled out in several design scenarios.

PV EXAM PREP (PV 220)

This 6-hour, online course has been created for those ready to take the NABCEP PV Associate Exam, or any entry-level exam in photovoltaics. We'll discuss test-taking strategies, review the logistics of NABCEP exams, and use practice questions to prepare you for test day.

SAFETY & BEST PRACTICES FOR PV INSTALLERS (PV280)

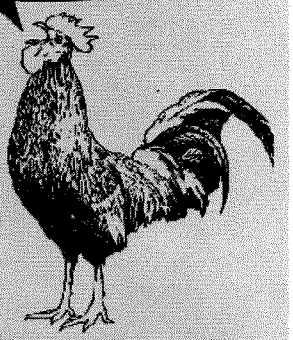
This is a self-paced 2 hour online course you will be given access to upon registering for the Academy.

EARN YOUR NABCEP PV ASSOCIATE:

On the last day of the Academy, sit for the leading entry-level solar professional exam, the North American Board of Certified Energy Practitioners (NABCEP) PV Associate Exam!

NABCEP ASSOCIATE Photovoltaic

Early Bird Discount Ends Dec. 1st!



ACADEMY TUITION:

MREA Members

~~$1799~~ - $1699 (Early Bird)

Non-Members

~~$1899~~ - $1799 (Early Bird)

QUESTIONS?

Contact MREA's Training Staff

courses@midwestrenew.org

715-592-6595

www.midwestrenew.org/sta

ATTENTION VETERANS

The following courses have been approved by the Wisconsin State Apprvoing Agency (SAA) for GI Bill education benefits at the Wisconsin Solar Training Academy:

- PV 101
- PV 201
- PV 202

mrea

midwest renewable energy association

RENEW WISCONSIN

SB 218 – Solar and Wind Energy Workforce Training Grants

Senate Committee on Economic Development, Commerce and Trade

Testimony by Jim Boullion, Director of Government Affairs

Wednesday, January 22nd, 2020

Mr. Chairman and Committee members, thank you for the opportunity to speak today. My name is Jim Boullion, Director of Government Affairs for RENEW Wisconsin. We are a not-for-profit, issue advocacy organization that supports the development of renewable energy in Wisconsin.

I am here today to ask you to support passage of SB 218, which would:

- Reserve a portion of Wisconsin's existing Fast Forward program to provide grants for education and training of existing or potential employees relating to the wind and solar industry.
- The maximum amount a single employer or employer consortium can receive is capped at $250,000, and the overall program is capped at up to $1,000,000 per biennium. Unused money will be available for other Fast Forward programs.
- Reimbursement can cover up to half the cost of training and the business must commit to hire the individuals once training is complete.
- DWD will be required to submit an annual report on the program, including: 1) the number of people trained; 2) the cost to train the employee; and 3) was the employee hired and retained.
- An amendment from the authors will delay funding for the program until next biennium (2021-22) and adds "inspection" of wind and solar systems as an acceptable training option.

Why is this legislation necessary? Because Solar Photovoltaic Installers and Wind Turbine Service Technicians are, according to the US Department of Labor, Bureau of Labor Statistics, the two fastest growing occupations in the country over the next 10 years, and it isn't even close. *(chart page 3)*

Why is the demand for solar and wind workers booming? Because the price of wind and solar have dropped dramatically and are now much lower than coal and on par with natural gas. On *page 4* is a chart with the historical average of the *unsubsidized* prices of energy from the industry recognized authority, Lazard, Inc.

As you can see, in the last 10 years the average price of solar energy has dropped 88% and wind has dropped by 69%, while the price of coal has stayed flat and nuclear has actually increased. The price of wind and solar is expected to decline even more in the future and their financial advantage will continue to increase.

As you would expect, this price drop in renewable energy is increasing demand in the marketplace from utilities and their customers. Not only will these lower prices help Wisconsin's utilities keep their rates competitive, it will help them meet their public commitments for clean energy generation by 2050.

In fact, in November Alliant Energy announced that as part of their clean energy goal they plan to develop 1,000 megawatts of solar by 2023. That would be 10 times the total amount of solar energy we had in all of Wisconsin, combined, just one year ago.

We estimate that Alliant's commitment alone will not only create 1,600 construction jobs, it will generate $4 million in shared revenue payments to local governments and pay out approximately $5 million in land rental income, primarily to farmers, every year, for 30 years.

That is only the beginning. In May of last year, when this bill was introduced, there were proposals on the MISO *(Midcontinent Independent System Operator)* electric grid planning queue to build an additional 4,250 megawatts (mW) of large scale solar and 800 mW of wind in Wisconsin. As you can see from the map in your handout, as of November 2019 the number of projects had spiked to 5,656 mW of solar, 1,196 mW of new wind projects and, in an exciting development, 321.5 mW of battery storage!

If all of these large-scale projects were built they would be worth $100's of millions of dollars in construction spending, as well as $10's of millions of dollars in local payments every year to farmers, towns and counties.

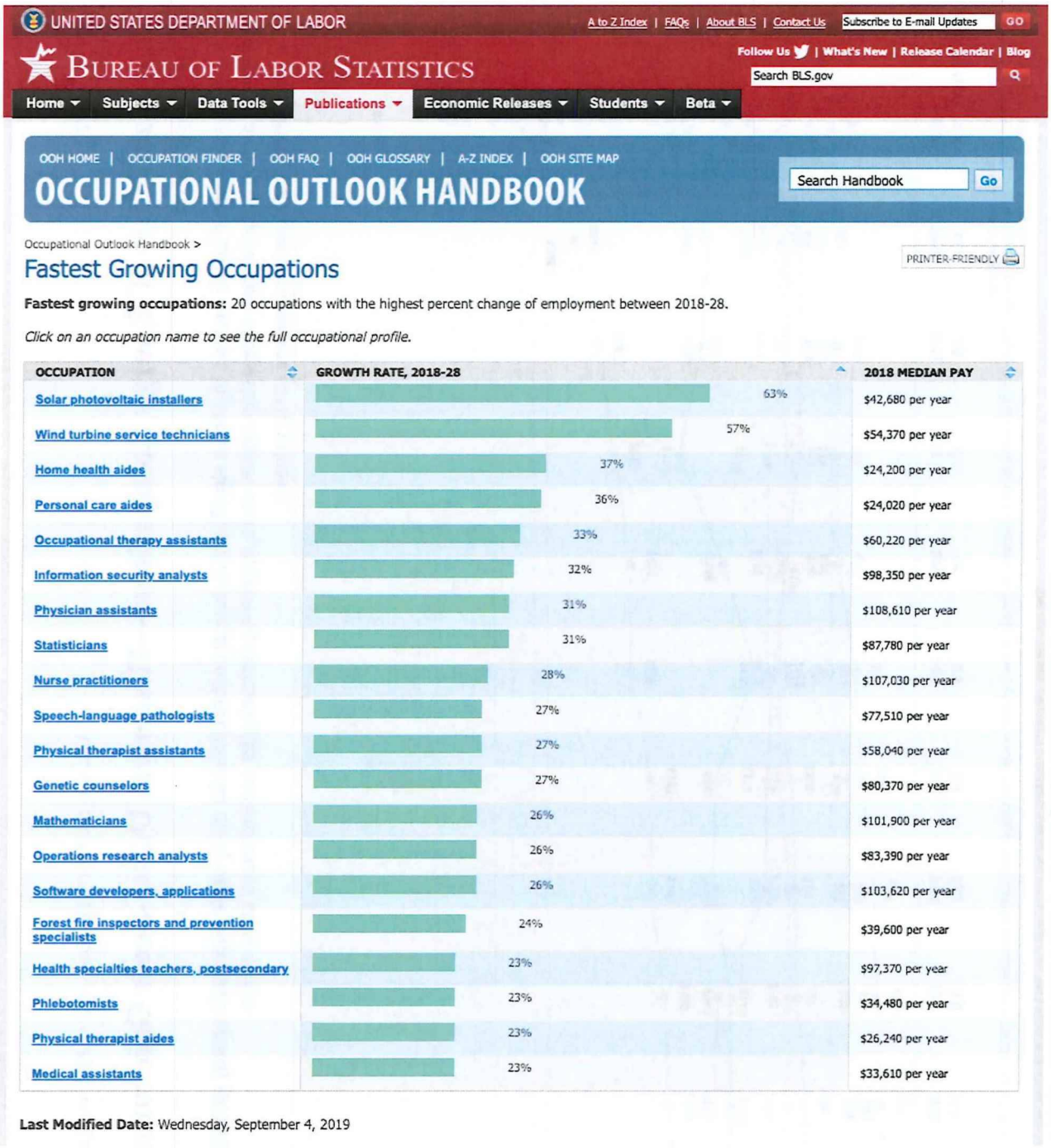
At the same time that this large, utility-scale work is being proposed, major companies in Wisconsin like Ashley Furniture, Organic Valley and American Family Insurance, as well as smaller companies like Central Waters Brewery, and home owners across the state are also installing their own on-site solar arrays to save money and to meet their energy goals, driving demand for trained workers even higher.

Among the biggest benefits of renewable energy are creating jobs and keeping dollars right here in Wisconsin. Right now, for many large projects, out-of-state crews travel around the country and do this work. This legislation will help us train a Wisconsin-based workforce to build more of the projects here in Wisconsin and be prepared to compete nationally in this growing field.

Solar and wind energy generation have the potential to be one of the largest growth industries in Wisconsin over the next decade. The economic benefits are enormous and ready to be captured if we work together, invest in our workforce and are prepared for that future.

Thank you for your support!

I would be happy to try and answer any questions you might have.

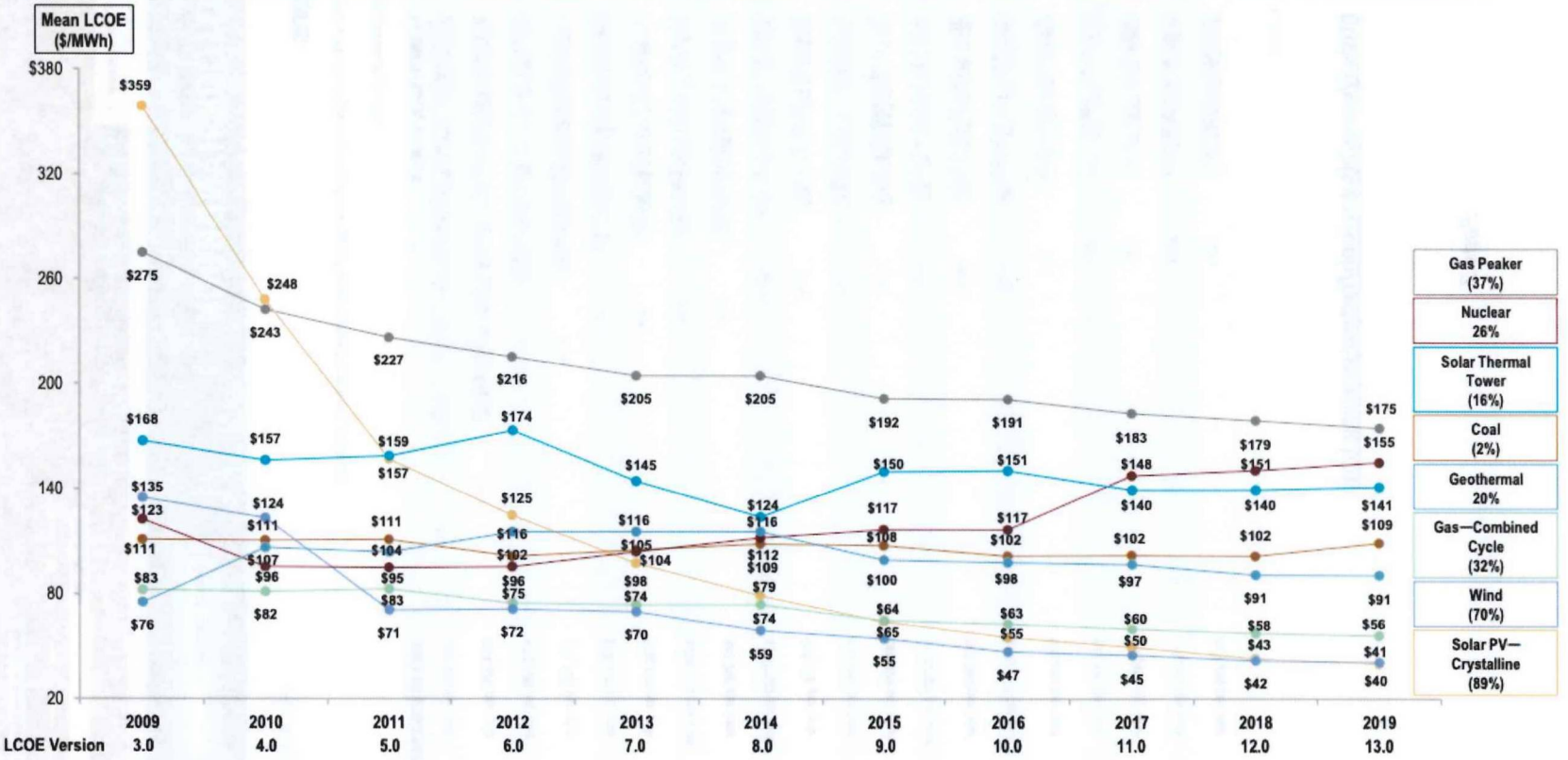


https://www.bls.gov/ooh/fastest-growing.htm

Levelized Cost of Energy Comparison—Historical Utility-Scale Generation Comparison

Lazard's unsubsidized LCOE analysis indicates significant historical cost declines for utility-scale renewable energy generation technologies driven by, among other factors, decreasing capital costs, improving technologies and increased competition

Selected Historical Mean Unsubsidized LCOE Values(1)



LAZARD

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Source: Lazard estimates.

(1) Reflects the average of the high and low LCOE for each respective technology in each respective year. Percentages represent the total decrease in the average LCOE since Lazard's LCOE—Version 3.0.

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https://www.lazard.com/media/451086/lazards-levelized-cost-of-energy-version-130-vf.pdf
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RENEW WISCONSIN

LARGE SCALE SOLAR & WIND DEPLOYMENT FOR WISCONSIN

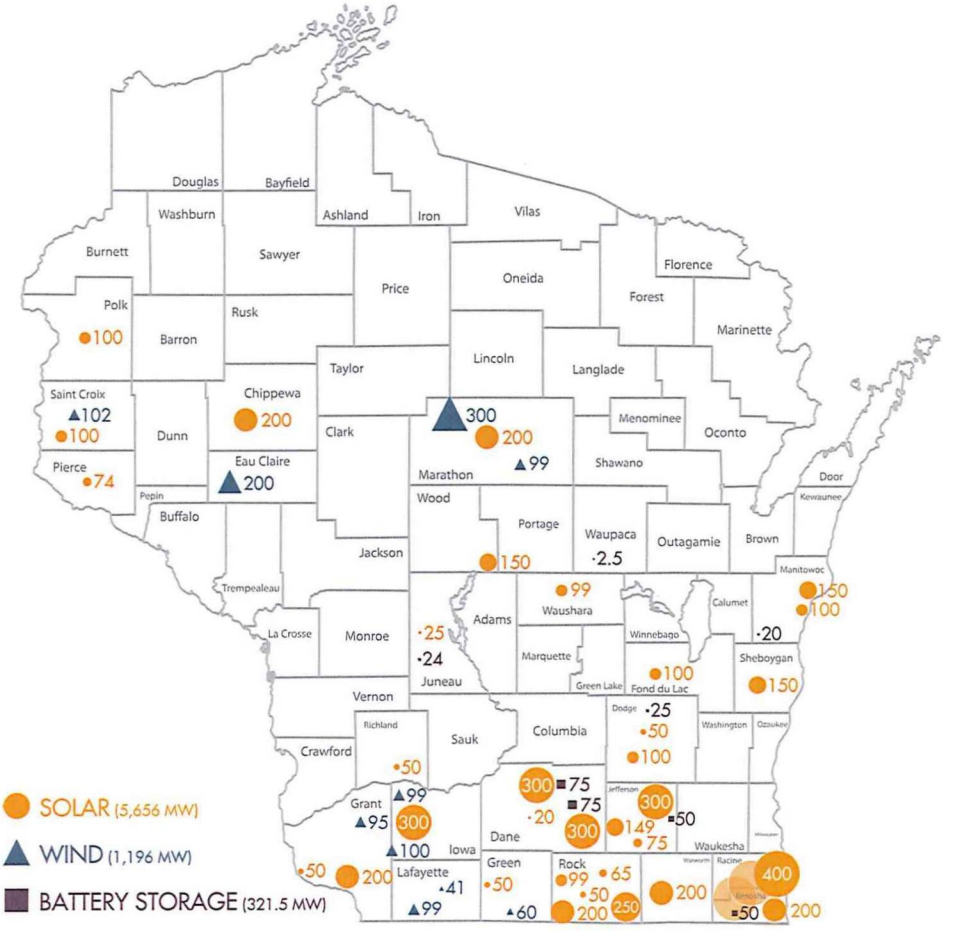
- 5,656 MW of solar and 1,196 MW of wind under development as of November 2019
- Wisconsin currently has 130 MW of solar, 52 MW of which is utility-scale
- Wisconsin currently has 737 MW of large-scale wind

WISCONSIN SOLAR, WIND, AND STORAGE UNDER DEVELOPMENT AS OF NOVEMBER 2019

5,656 MW Solar
1,196 MW Wind
321.5 MW Storage

*Numbers in map denote project size in megawatts

*Data sourced from November 2019 Midcontinent Independent System Operator (MISO) Queue and RENEW Wisconsin



RENEW WISCONSIN'S AGENDA TO ACCELERATE LARGE SCALE SOLAR & WIND DEVELOPMENT

SOLAR FOR CORPORATIONS AND LOCAL GOVERNMENTS

Working with electric providers to offer a low-cost service to large customers that desire clean energy.

POLLINATOR PLANTINGS UNDER THE ARRAYS

Working with solar developers to landscape their projects with pollinator gardens that sustain bird and bee populations.

SUPPORTING LARGE SOLAR AND WIND DEVELOPERS

Facilitating regulatory approvals through outreach to citizens and media.

HELPING UTILITIES MEET THEIR VOLUNTARY RENEWABLE COMMITMENTS

Our largest utilities' current renewable mix and stated goals.

UTILITY	NO. OF CUSTOMERS	2018 TOTAL RENEWABLES MIX*	STATED GOAL
WEC (We Energies and Wisc. Public Service)	1.14 million + 446,000	WE 6.0% WPS 6.5%	80% CO_2 reduction by 2050
Alliant	470,000	12.5%	33% renewables by 2024 80% CO_2 reduction by 2050
Madison Gas and Electric	153,000	11.3%	30% renewables by 2030 100% net-zero CO_2 by 2050
Xcel Energy	241,000	24.6%	80% CO_2 reduction by 2030 100% carbon-free by 2050
Dairyland Power	263,000	16.7%	PPAs for 98 MW Wind (2017), 149 MW Solar (2021)
WPPI Energy	200,000+	15.0%	PPAs for 132 MW Wind (2018) and 100 MW Solar (2020)

*Sourced from "Electric Provider Renewable Porfolio Compliance for 2018" PSC Docket 5-RF-2018 Appendix C-4 Column 16

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SB #218

Public Testimony: AB 237

SunPeak

Provided by: Mike Riverun, Director of Project Development, SunPeak

SunPeak background/perspective:

- SunPeak is a solar PV developer working exclusively in the C/I space. We can attest that demand for solar is indeed growing rapidly. In the last five years, our company has grown drastically. [Could add metrics here on installed capacity increases if desired.] The number and size of contracted solar PV projects is growing, and as a result, our workforce has also grown significantly.

- In addition to employing more than thirty people within our engineering, development, and professional team, we employ two dozen full-time solar installers as well as six full-time construction foremen and superintendents, and we are constantly recruiting. We have the capacity and desire to hire additional workforce immediately and we believe this will be a sustained need in the coming years.

Solar PV recruitment and training:

- While finding qualified people to work in any trade right now is challenging, solar construction is unique in that it's very accessible to a broad group of individuals. With motivation to do a good job and a mind for safe practices, just about anyone can learn how to be successful as a solar installer. In fact, due to a strong partnership with the Urban League, we have been able to grow our construction crew drastically by becoming a "second chance" employer. You might be surprised to learn that most of our current construction crew has at one point served prison or jail time, or otherwise lacked the education, job skills or opportunity to obtain gainful, steady employment in a traditional setting prior to joining SunPeak.

- As an organization, we invest heavily in training and work very closely with our construction team to teach quality workmanship and instill safety as a #1 priority. I really cannot emphasize how important training is to our company. SunPeak has earned and maintains a perfect safety rating and we employ a fulltime corporate director for Health, Safety and Environmental oversight. In addition to working near electricity, our work takes us on tall buildings, pitched roofs, and in all weather conditions. We operate heavy machinery, have fall hazards and work with heavy loads of materials. One misstep can have unthinkable consequences. Proper training is paramount to our success as a company, the success of renewable energy adoption across our state, and ultimately our nation.

- In addition to OSHA training, classroom training, onsite mentorship and skills practice, we invest time and energy daily for safety and quality training. [Russell could enhance this further if you wanted to add other points specific to number of hours or estimated monetary investment per worker].

Why does this matter for Wisconsin?
By funding and incentivizing renewable energy training at a state level, Wisconsin benefits greatly:

- As a state, we will achieve our renewable energy goals faster. Having more qualified workers not only supports renewable energy adoption, it keeps safety standards high – for individual workers and the entire industry.

- As a state, we have a real opportunity here to get job seekers with limited means for employment on a solid pathway to a successful future. There are careers, not just jobs available in solar. It is worthwhile to note that in our own organization last year, 20% of our second chance workforce was promoted at least once. Additionally, within the first year of employment, our installers, on average, see a 30% increase in their annual earnings compared to their prior employment. For many, this is life changing, not just for the worker, but most importantly, for their family's financial security. It's the difference between living paycheck to paycheck and having the capacity to not only fund basic needs, but to create savings.

- Passing this bill and supporting training initiatives is important to Wisconsin because we will surely fall further behind without it. We are not on the cutting edge here; other states have already embraced this idea and are capitalizing on it. For example, this past summer, we worked on several projects in Illinois and, through our partnership with the Tri-County Urban League in Peoria, we were able to hire solar-trained installers immediately for local projects. These workers were trained due to funding available through Illinois' Future Jobs Act, a state-supported initiative to promote the development of new photovoltaic distributed generation in Illinois. If we do not adopt bills such as AB 237, we miss an important chance to stay competitive.

In closing, I'd like to leave you with a quote from one of our second chance employees, Cornelius Perkins, who was promoted from a solar installer to a construction foreman about six months ago:

"SunPeak took a chance with me. Knowing my prison background, they didn't discriminate. They just wanted me on the team. They just wanted me to have an opportunity with a great company

that's taking off and it really is. I really appreciate that. There's not a lot of people that I know that will say or tell me that they believe in me. That takes a lot. When someone says they believe in me, I go hard. Because it uplifts my spirits.

I am standing on everything I said I was going to do. Because I want to see that change - I want to see that change for the better, for my future. I have a daughter, so I have stories to tell, I now have funds to put aside for her. I'm able to take care of my responsibilities as a man. I really appreciate SunPeak for giving me the chance to work with them."

We share this sentiment not to pat ourselves on the back, but to highlight the possibilities here, and there are so many other examples like Cornelius' that we could share. Solar PV companies like SunPeak can put Wisconsin residents to work in renewable energy, but there is more work than workforce available right now, and safety training is critical. State support, including incentives like AB 237 are a meaningful start.

As an organization, we provide our wholehearted support for this bill, and we encourage members of the legislature to take this important step for our state, for economic development, for workforce development, and for the support of clean energy expansion.